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October 3, 2001

Nancy Cole, Supervisor  
Docket Control  
Arizona Corporation Commission  
1200 W. Washington  
Phoenix, AZ 85007

Arizona Corporation Commission  
**DOCKETED**

OCT 03 2001

DOCKETED BY	<i>mac</i>
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RE: Bowie Power Station, L.L.C.  
Docket No. L-00000Y-01-0118  
(Case No. 118)

RECEIVED  
AZ CORP COMMISSION  
DOCUMENT CONTROL

2001 OCT -3 PM 3:40

Dear Ms. Cole:

Enclosed for filing and transmittal to the members of the Arizona Power Plant and Transmission Line Siting Committee are twenty-five (25) copies of slides that will be used by the Applicant in the above-captioned proceeding during its direct case presentation at the October 11-12, 2001 hearings before the Siting Committee in Wilcox. Copies of the same slides are contemporaneously being mailed to known parties of record.

Please contact me in the event you should have any questions. Thank you for your assistance.

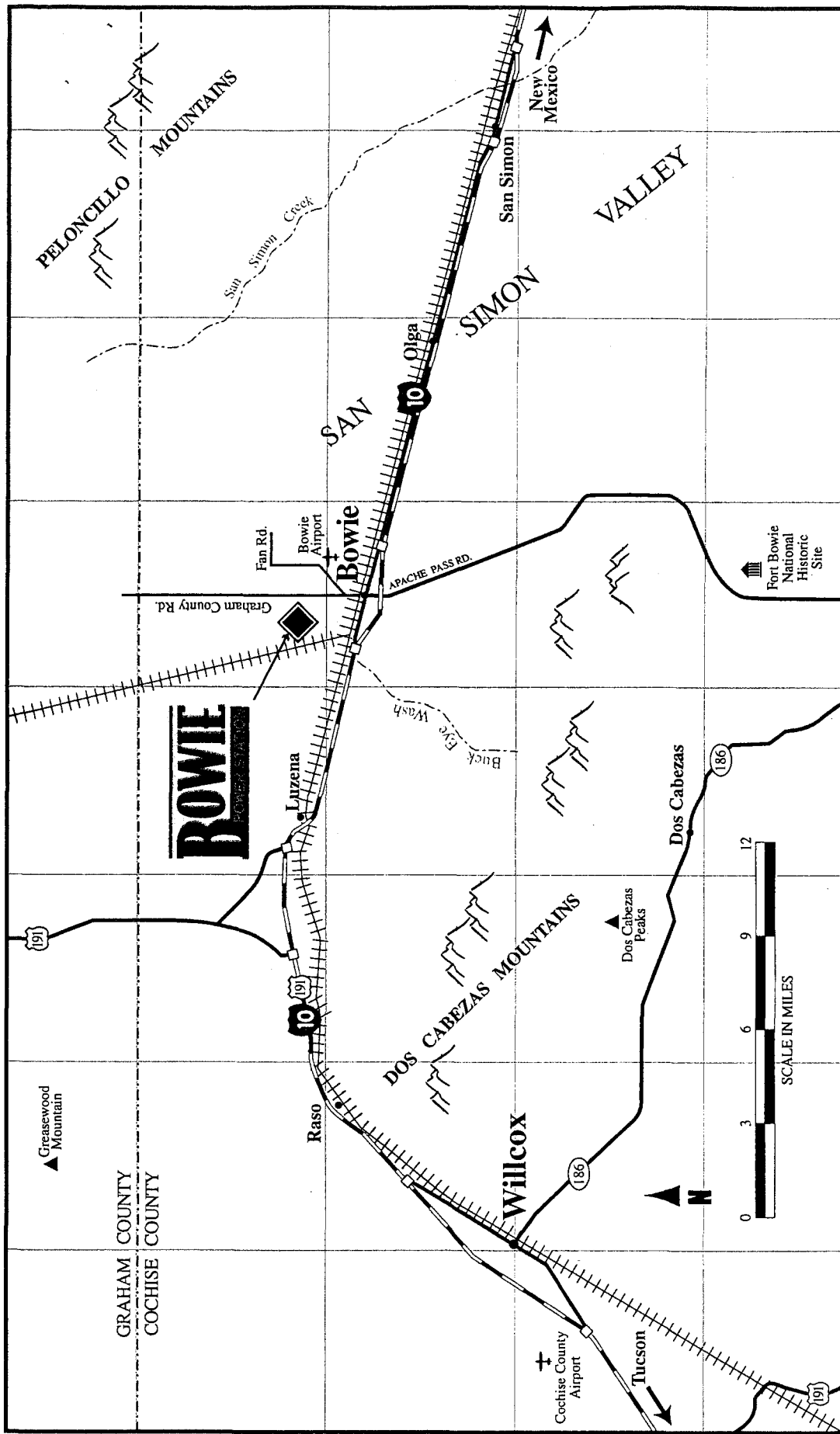
Sincerely,

*Lawrence V. Robertson, Jr. /mll*

Lawrence V. Robertson, Jr.

LVR:cl

cc: Laurie A. Woodall, Chairman  
All parties of record



### Bowie Power Station Site Map

- I-10 east to the first Bowie exit (west Bowie exit)
- Travel east on access road
- Go north (left) on Center Street (becomes Graham County Road)
- Travel approximately 2 miles. The power plant site will be on the left, and is marked by a property sign that states: "Future Site of Bowie Power Station".



## **Bowie Power Station**

### **Application for a Certificate of Environmental Compatibility**

**Bowie Power Station, L.L.C.**

**Prepared for**

**State of Arizona Power Plant and  
Transmission Line Siting Committee**

**October 11, 2001**

1



## **Witness Background**

- Tom C. Wray
- General Manager, SWPG II, LLC

2



## Witness Background

- Educational Background
  - Bachelors of Science, Louisiana State University
  - Masters, Electrical Engineering, University of Colorado
  - Masters, Business Administration, University of New Mexico
- Over 30 years of professional experience in electric power industry
- Developed, licensed, and permitted the Navajo Transmission Project and Panda Gila River Power Generation Facility
- Participating as Applicant's policy representative in Toltec Power Station CEC (Cases 112 and 113)

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## Scope of Testimony

- Market Analysis
- Public Involvement Activities
- Property Tax Benefits
- Conclusions

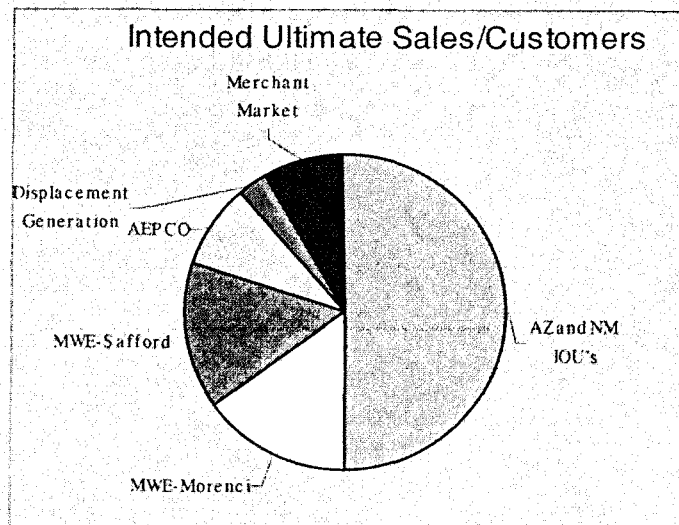
4

## Capacity and Energy Contract Sales To:

- Tucson Electric Power Company
- Morenci Water & Electric
  - Morenci mine
  - Proposed Safford mine
- Arizona Electric Power Coop., Inc.
  - Regional electric cooperatives
- Other utilities in Arizona and New Mexico
- Displaced generation

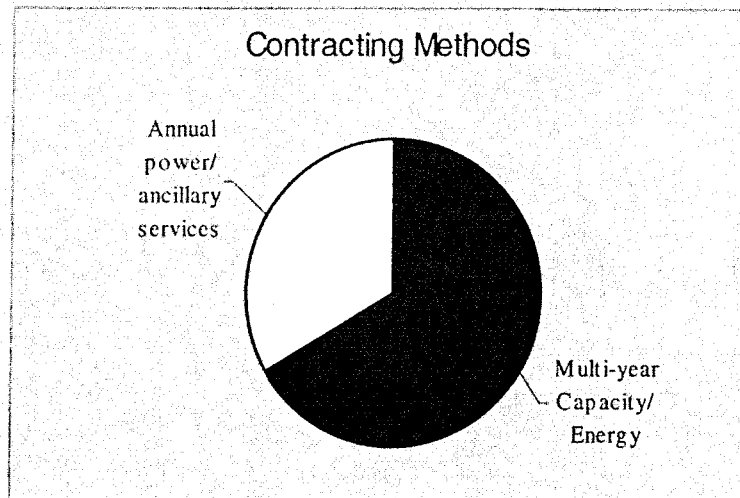
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## Bowie Project Output



6

## Bowie Project Output



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## Public Involvement Activities

- Initial Press Release – January 31, 2001
- Over 35 “leader packets” to officials, agencies, and key community members
- Newsletters in April and September 2001 (approximately 4,670 recipients)
- Toll free telephone information line
- Public meetings in Willcox and Bowie in April 2001

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## Public Involvement Activities (continued)

- Media outreach efforts
  - Two news releases
  - Paid display advertisements (two local newspapers to announce public meetings)
  - Several news articles in Arizona Range News

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## Meetings and Briefings

- Cochise County
- Graham County
- Bowie Fire Department
- Bowie Unified School District
- City of Willcox
- Willcox Chamber of Commerce and Agriculture
- Willcox Unified School District
- San Simon Unified School District

10

## Property Tax Benefits

- Potential to add \$3 to \$5 million in annual revenues per project phase
  - Bowie Unified School Districts
  - Fire District
  - Library
  - Flood Control District
  - General County

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## Conclusions

- Market Considerations and Need
  - Meets key market needs (Phoenix, Tucson)
  - Compliments ongoing planning and reliability efforts in the state (Central Arizona Transmission Study)
- Economic Considerations
  - Provides tax revenues
  - Promotes local development
  - Provides employment
- Community Support
- Environmentally Compatible
- Balances Need and Environment

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## Bowie Power Station

### Application for a Certificate of Environmental Compatibility

Bowie Power Station, L.L.C.

Prepared for

State of Arizona Power Plant and  
Transmission Line Siting Committee

October 11, 2001

1



## Witness Background

- Jeffrey W. Schroeter, Genovation Group, Inc.
- Acting Project Manager for Bowie Power Station

2



## Witness Background

- Jeffrey W. Schroeter, P.E.
- President, Genovation Group, Inc.
- Educational background
  - BS Mechanical Engineering, Texas A&M University
- Over 22 years of professional experience in all aspects of power generation project development
- Past Chair, ASME Power Division
- Developed Panda Gila River Power Generation Facility, Case No. 99

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## Scope of Testimony

- Project Facilities and Site Description
- Transmission Facilities
- Natural Gas Supply
- Water Supply
- Permits and Approvals
- Security
- Conclusions

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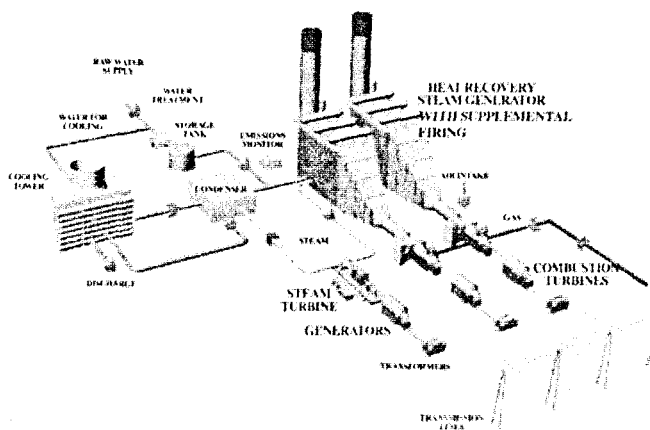
## Project Facilities

### Base Design

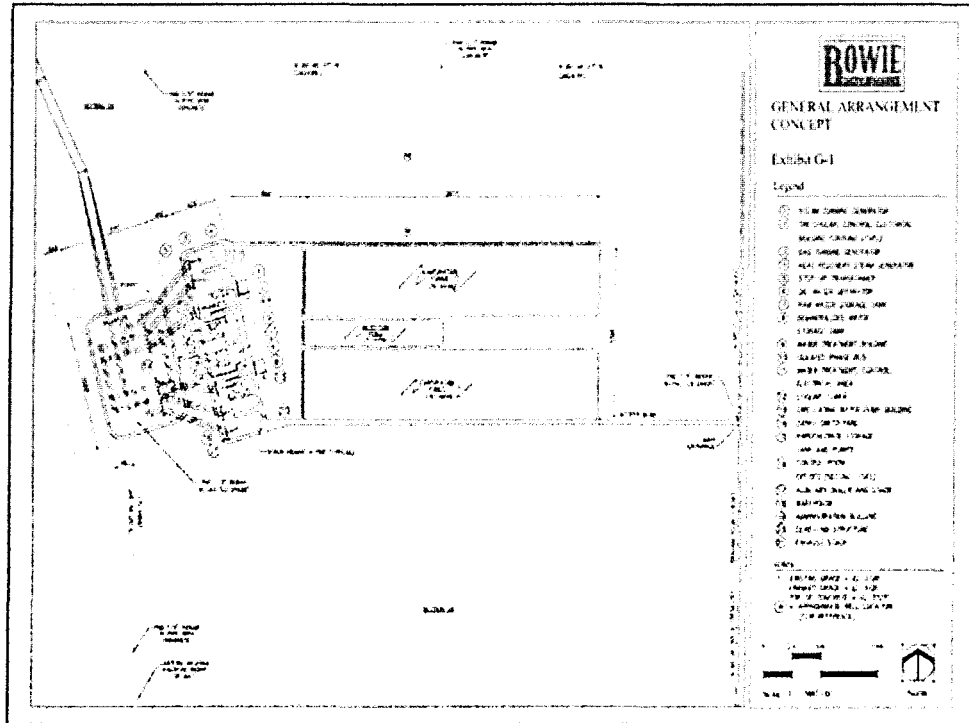
- Two 500 MW (nominal) units in a base load configuration
  - Combined cycle
- 100 MW (nominal) peaking resource
  - Duct firing capability
- Allows for phased construction

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## Project Facilities



6



**ROWIE**  
POWER STATION

## Site Attributes

- Near existing high voltage transmission lines and accessible corridors
- Near existing All American and El Paso Natural Gas pipelines
- Adequate water supply
- Low population density
- Absence of critical cultural/biological issues
- Adequate land buffer
- Community support
- Property located outside of 100-year floodplain



## Transmission Facilities

- Bowie 345kV Switchyard to proposed 345/230kV Willow Switchyard in Graham County
  - Tie the Bowie 345kV transmission lines into the existing TEP Greenlee-Vail and/or Springerville-Vail 345kV transmission lines
  - Provides an optional interconnection with the AEPCO Red Tail-Dos Candados 230kV transmission line located adjacent to the switchyard site

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## Transmission Route Benefits

- Shortest route
- Allows for both 345/230kV connections
- Closely follows existing roads

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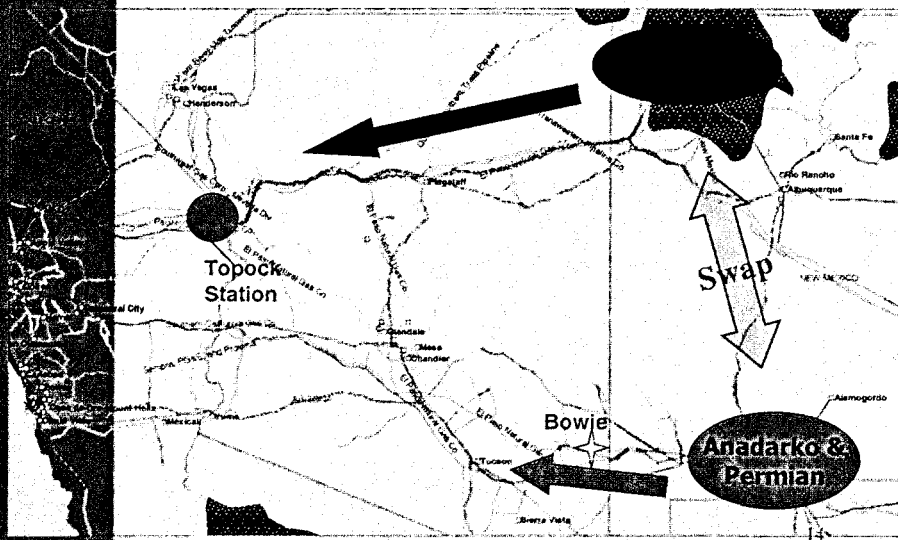
## Natural Gas Supply and Transportation

- Bowie will consume approximately 200,000 Dth per day of natural gas at full build out
- Supply will be sourced from multiple production basins, primarily the Anadarko, Permian, and San Juan; Bowie also has access to Central Rockies production volumes
- Transportation will be sourced from the El Paso Natural Gas system
- Bowie will have adequate supply and transportation options available for its generation needs

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## Southwest Pipeline Systems





## Water Supply Requirements

- Approximately 5,500 acre-feet per year, 3,410 gpm at full build out (two-unit configuration)
- Very efficient use of water supply compared to solid fuel plants
- Plant will be supplied by groundwater from on-site wells

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## Water Use

- Design average of 15 cycles of concentration in the plant's cooling towers
- Discharge blowdown water and add make-up water to cooling towers continuously
- Zero liquid discharge water handling and evaporation system preventing off-site discharge

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## Water Supply Studies

- Initial assessment of groundwater conditions using existing data
- Field inventory of existing wells on the Bowie property
- Aquifer testing of existing irrigation wells
- Groundwater sampling and analysis
- Modeling of water level drawdowns to assess potential impacts of new wells

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## Groundwater Availability Results

- Sufficient groundwater beneath the Bowie property to meet needs for the planned 30-year life of the facility
- Property is not located within a groundwater Active Management Area (AMA) or Irrigation Non-Expansion Area (INA)

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## Groundwater Quality Investigation Results

- Groundwater quality is excellent
- TDS concentration ranges about 250 milligrams per liter
- No exceedances of numeric Aquifer Water Quality Standards

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## Water Level Drawdown Results

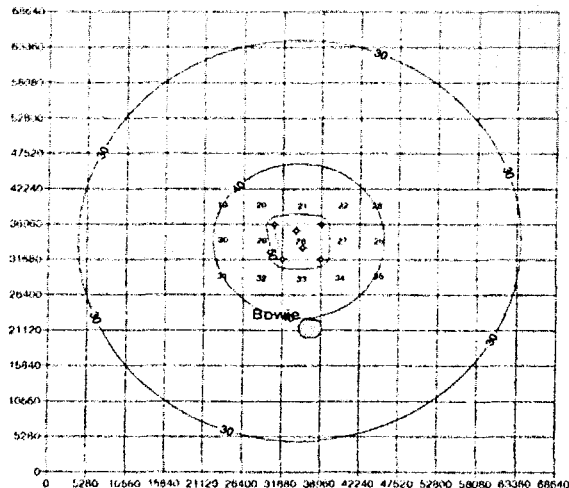
- Analysis assumptions
  - Six new wells pumping for 30 years
  - Analyzed incremental drawdown beyond current agricultural pumping
  - Total incremental pumping rate of 1,840 gpm (307 gpm per well)
- Model results
  - Predicted 40 to 50 feet of drawdown at the wellfield after 30 years

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## Model-Predicted Water Level Drawdown Contours

703 acres  
 Pumpage = 5,500 ac-ft/yr = (703 ac x 3.5 ac-ft/ac/yr) = 2,460 ac-ft/yr = 1,840 gpm  
 6 wells each pumping at 307 gpm for 30 years  
 T = 40,000 gpd-ft  
 S = 0.0005



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## Subsidence and Earth Fissure Investigation

- No significant subsidence
  - Total of 5 feet of subsidence at the plant site through 2001
  - Predicted 2.2 feet residual subsidence without plant
  - An additional 2.4 feet of subsidence may occur as a result of pumping for 30 years
- The power plant facilities and infrastructure will be designed to accommodate possible subsidence

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## Subsidence and Earth Fissure Investigation

- No significant earth fissuring
  - Nearest earth fissure is 2 miles to the east of the property
  - No fissures trend toward plant site location
  - Potential for formation or growth of earth fissures is negligible

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## Permits and Approvals

- Prevention of Significant Deterioration (PSD) permit (Arizona Department of Environmental Quality and EPA)
- Well Drilling and Operations Permit (Arizona Department of Water Resources)
- Aquifer Protection Permit (Arizona Department of Environmental Quality)
- Special Use Permit (Cochise County)
- Transmission line right-of-way (Arizona State Land Department)

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## Bowie Plant Security

- Perimeter security fencing
- Security lighting
- Controlled access gates
- Redundant sources of communications to off site
  - Electric control area
  - El Paso Gas transmission
  - Law enforcement and general public
- On-site water production
- Coordination with local governmental agencies

25



## Conclusions

- Site location and infrastructure
  - Optimizes transmission interconnections and existing corridors
  - Adequate natural gas supply and transportation option
  - Adequate water supply
  - Road and rail access

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## Conclusions (continued)

- Environmental Compatibility
  - Will meet or exceed air and water quality standards
  - Low population density
  - Absence of critical cultural/biological issues
  - Minimal noise and visual impact
  - Comprehensive landscape and reclamation plan



## Witness Background

- Michael S. Siegel, AICP
- Principal, Senior Planner, and Project Manager for EPG
- Education
  - Masters, City and Regional Planning, Illinois Institute of Technology
  - BA, University of California, Los Angeles

1



## Witness Background (continued)

- 20 years of experience in environmental planning and electrical facility siting
- EPG's lead consultant for preparation of CEC application

2



## Scope of Testimony

- Overview of project site conditions
- Present environmental studies and results
- Provide opinion on environmental compatibility of the project

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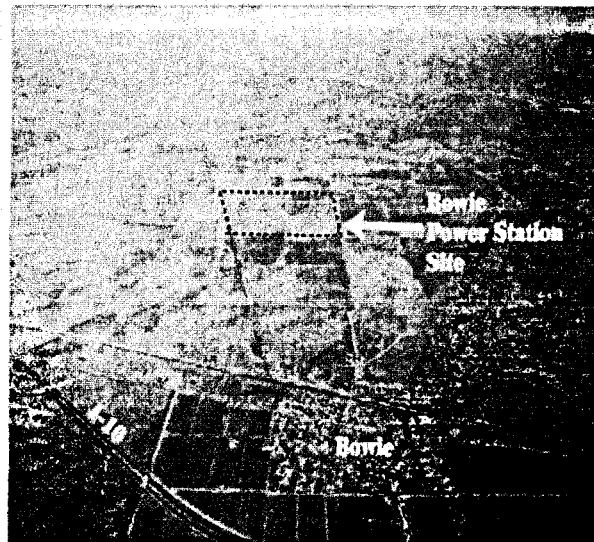
## Overview of Project Site

- Plant site
- Views/existing conditions
- Transmission line route

4

**BOWIE**  
POWER STATION

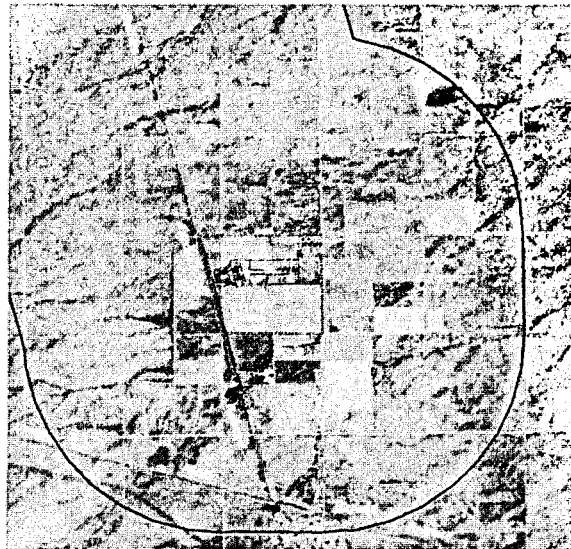
## Aerial View of Plant Site



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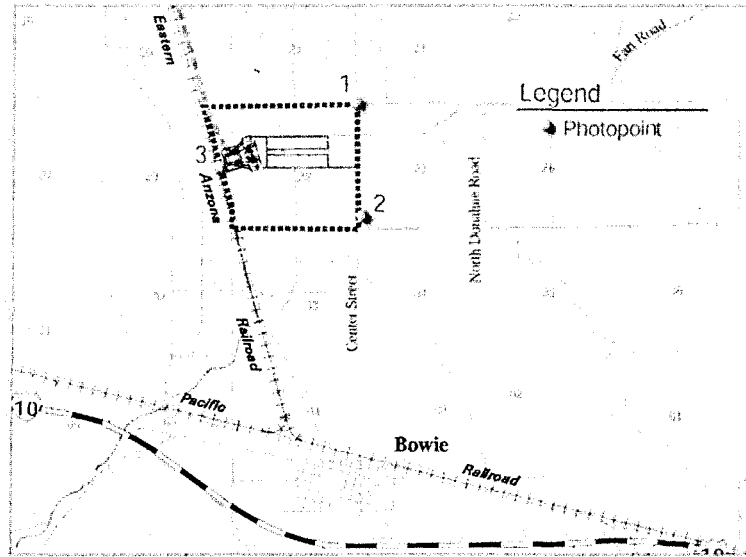
**BOWIE**  
POWER STATION

## Site Location

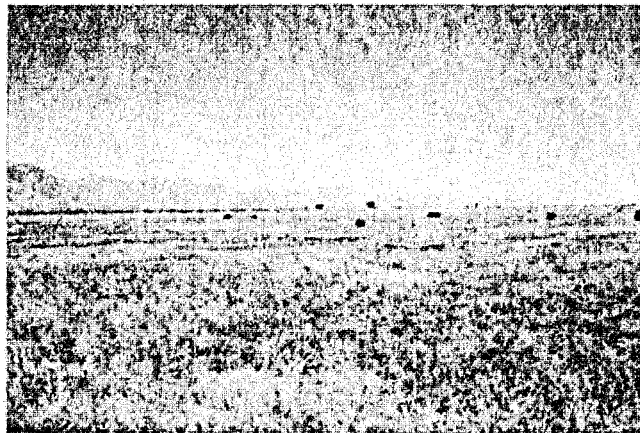


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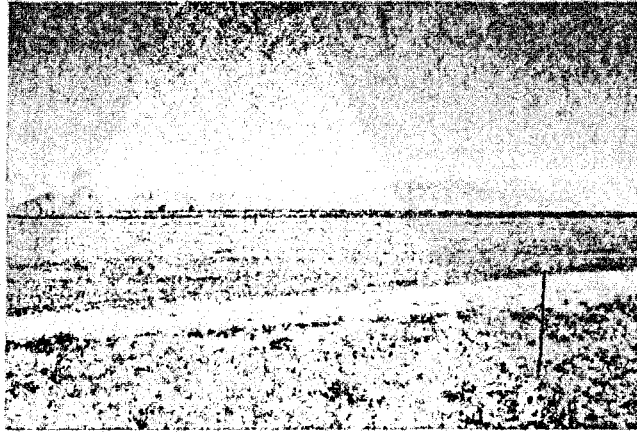
## Viewpoints



## Location 1

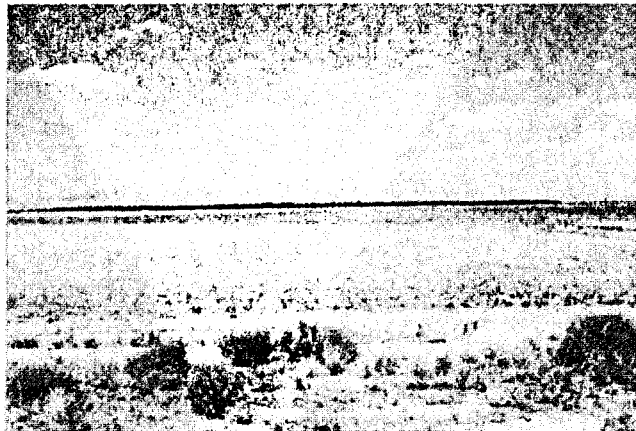


## Location 2

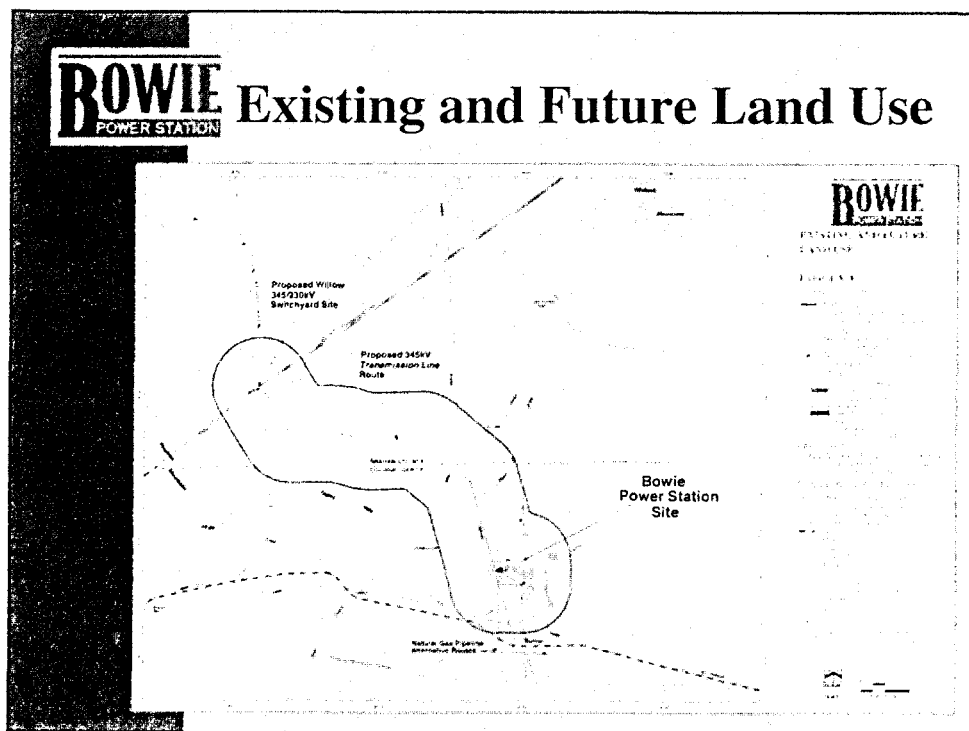
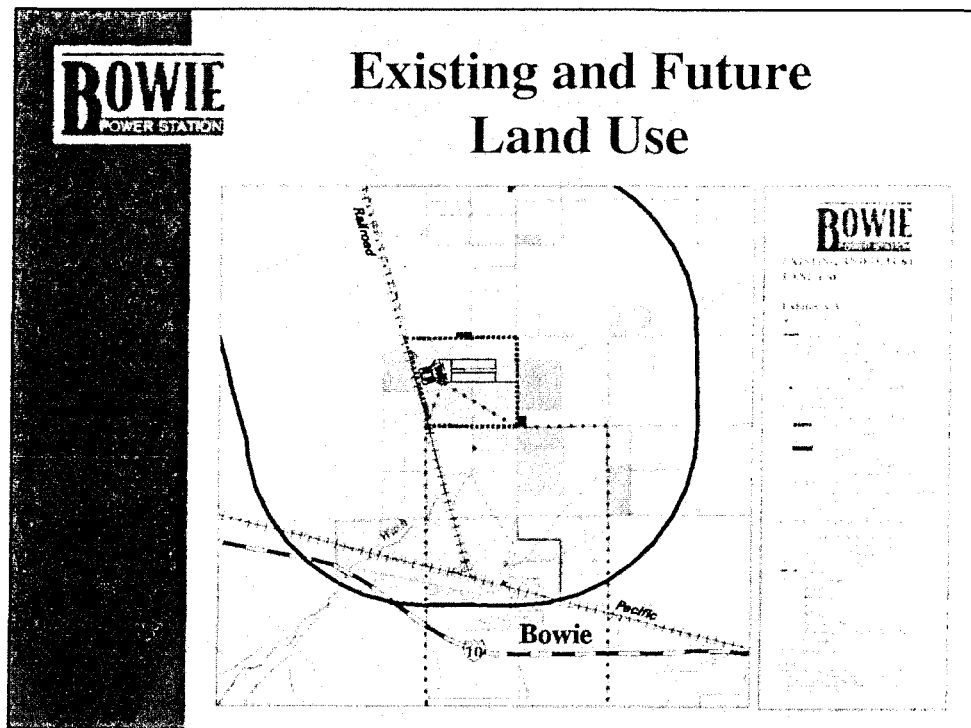


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## Location 3

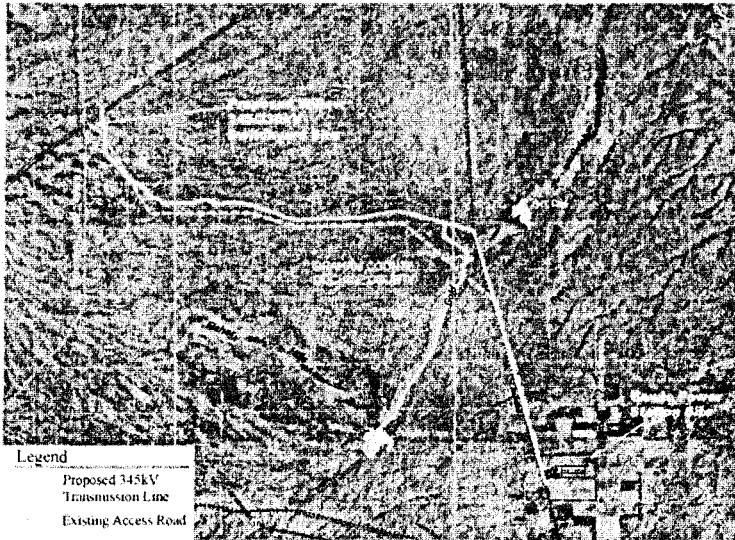


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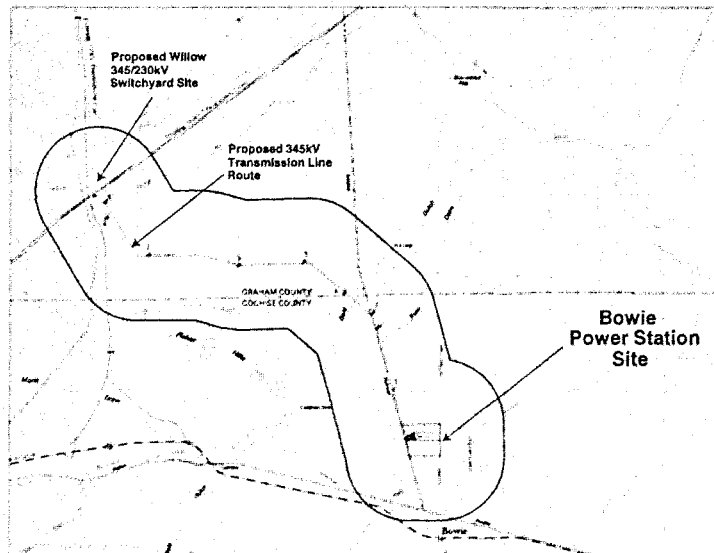
**BOWIE**  
POWER STATION

## Transmission Line Route

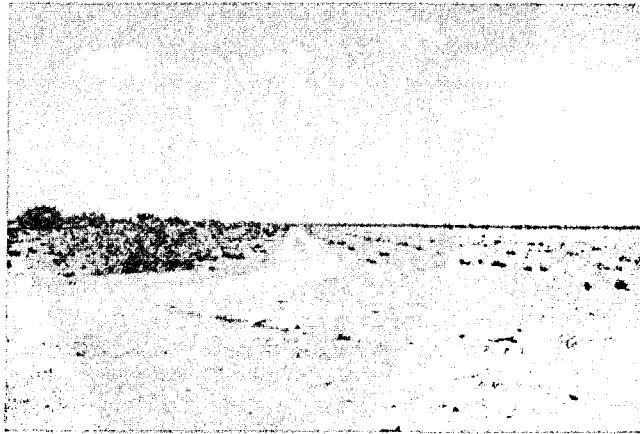


**BOWIE**  
POWER STATION

## Photopoint Map

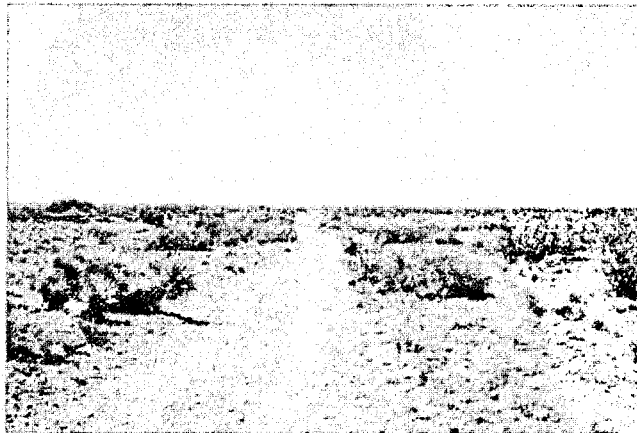


## Point 1 (north)



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## Point 2 (north)



16

**BOWIE**  
POWER STATION

## Point 3 (northwest)



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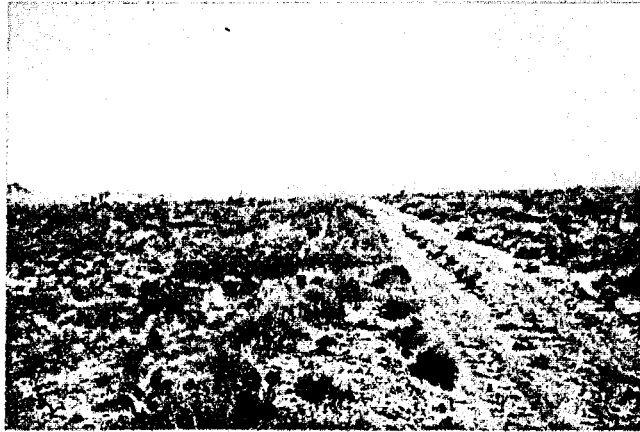
**BOWIE**  
POWER STATION

## Point 4 (northwest)



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## Point 5 (west)



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## Point 6 (west)



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## Point 7 (northwest)



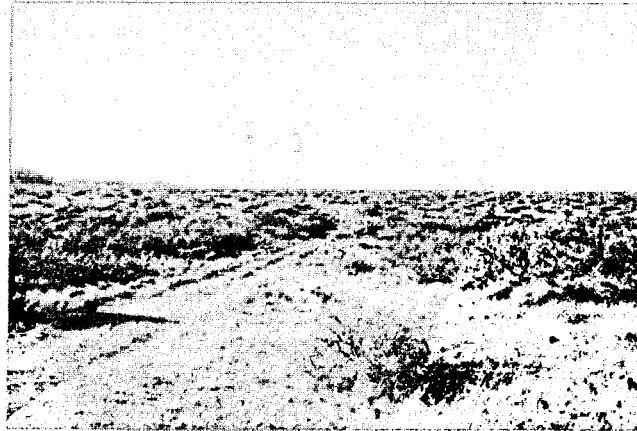
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## Point 8 (northwest)



22

## Point 9 (northwest)



23

## Environmental Studies and Results

- Existing and future land use
- Biological resources
- Historic and archaeological resources
- Scenic areas and visual resources
- Noise and interference

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## Existing Land Use

(Exhibits A, B-1)

- Power plant site is located on private land used for farming
- Transmission line route crosses vacant state and private land
- Nearest permanent residence located approximately 1 mile south of power plant and transmission line route
- No conflict with existing land uses associated with the plant site or transmission line route

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## Future Land Use

(Exhibits A, B-1)

- No pending major subdivisions or master planned developments in study area
- Project site designated as Category D - Rural Area in Cochise County Comprehensive Plan
  - Heavy industry is permitted in Category D
  - Facility will require a special use permit
- No conflicts with future land uses or development plans associated with the plant site or transmission line route

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## Biological Resources

(Exhibits C, D)

- Field reviews conducted
- Contacted state and federal agencies
  - Arizona Game and Fish Department
  - U.S. Fish and Wildlife Service
- No special status wildlife, plant species, or habitat found on plant site or transmission line route

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## Historic and Archaeological Resources

(Exhibit E-2)

- Records search and intensive Class III field survey conducted
- No adverse impacts to historic or archaeological resources associated with the plant site or transmission line route

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## Scenic Areas and Visual Resources

(Exhibits E-1, G)

- Low to average scenic quality
- Transmission line route follows existing access
- Limited viewers
  - Nearest residence 1 mile away
  - Bowie community 2 miles away
- Minimal visual impacts with mitigation

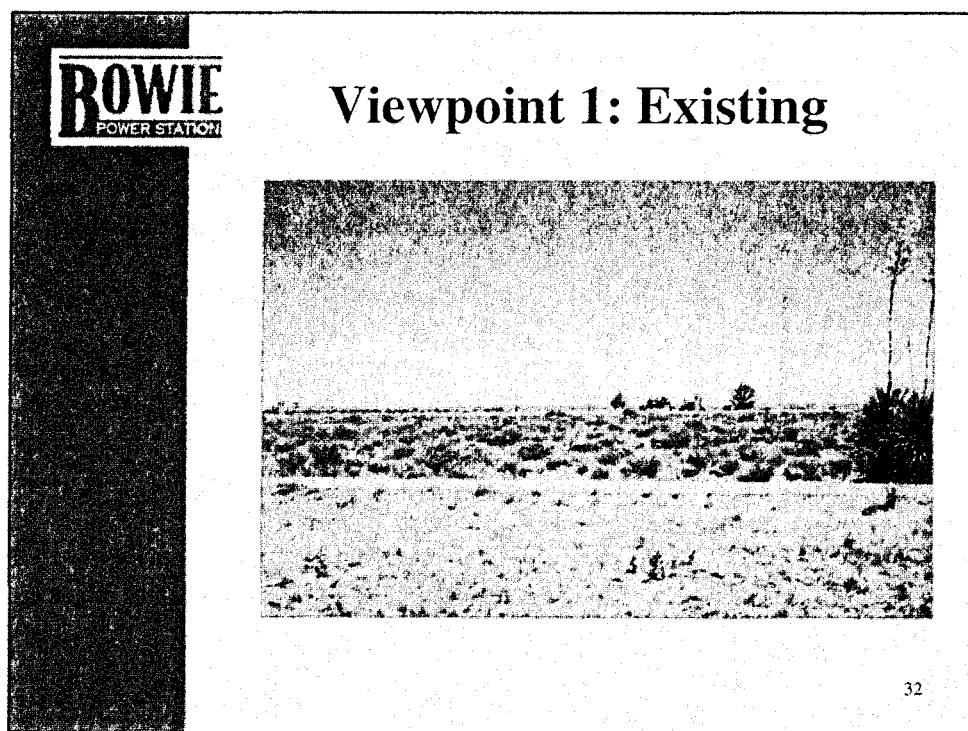
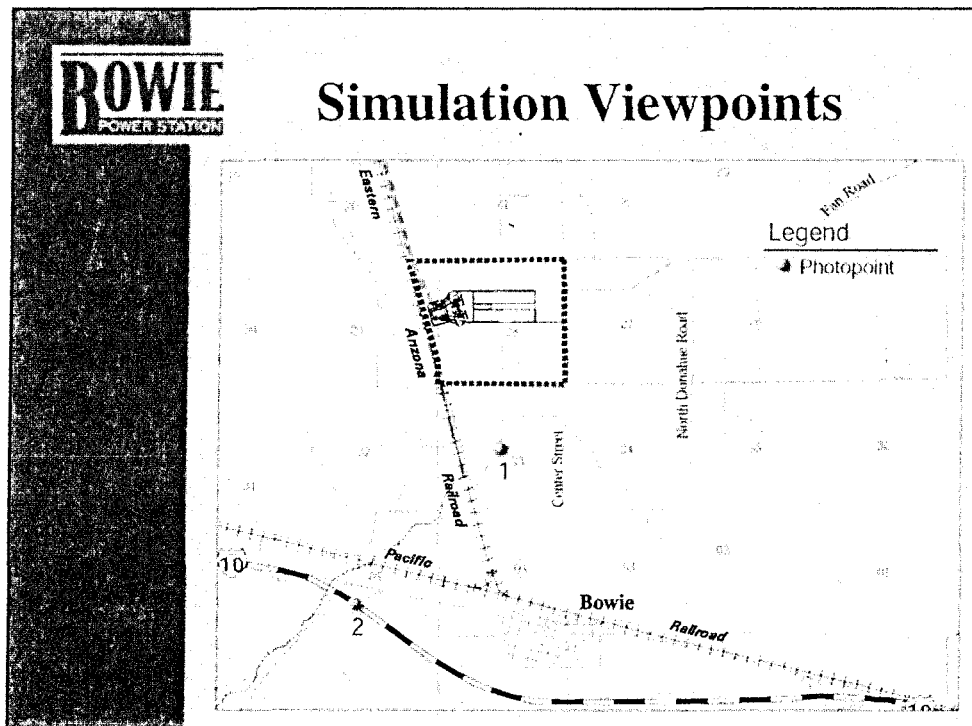
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## Visual Mitigation

- Plant site
  - Landscape rehabilitation and enhancement
- Transmission line route
  - Utilize existing or overland access
  - Dulled steel single-pole transmission structures
  - Non-specular conductors

30

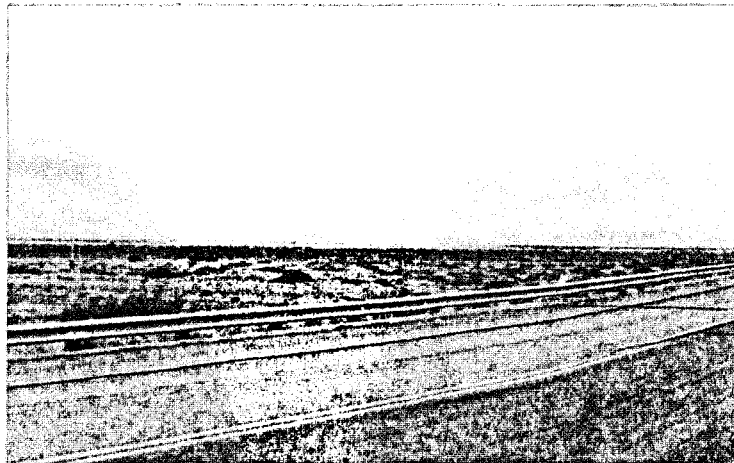


## Viewpoint 1: Simulation



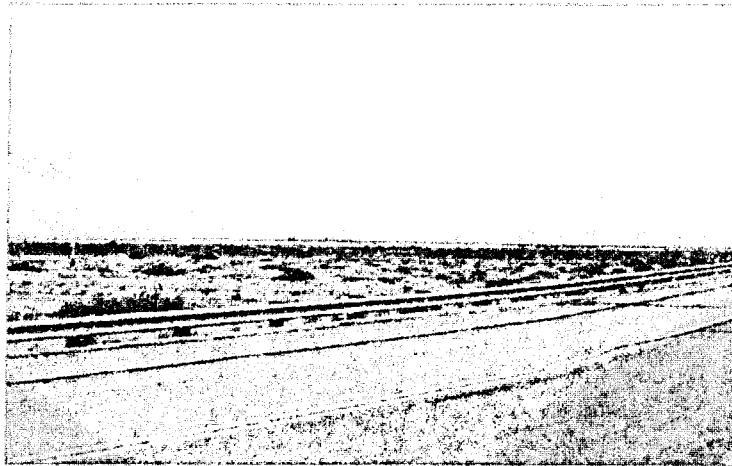
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## Viewpoint 2: Existing



34

## Viewpoint 2: Simulation



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## Noise and Interference

(Exhibit I)

- Completed ambient noise survey
- Sound level of proposed project within established EPA and HUD guidelines
- No interference with communication signals

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## Conclusion

- Minimal impacts will be caused by construction and operation of the project facilities
- Project is environmentally compatible based on review of factors set forth in A.R.S. § 40-360.06



## Witness Background

- Scott Peters, RLA, ASLA
- Director of Design Services for EPG
- BLA - Utah State University
- 6 years experience

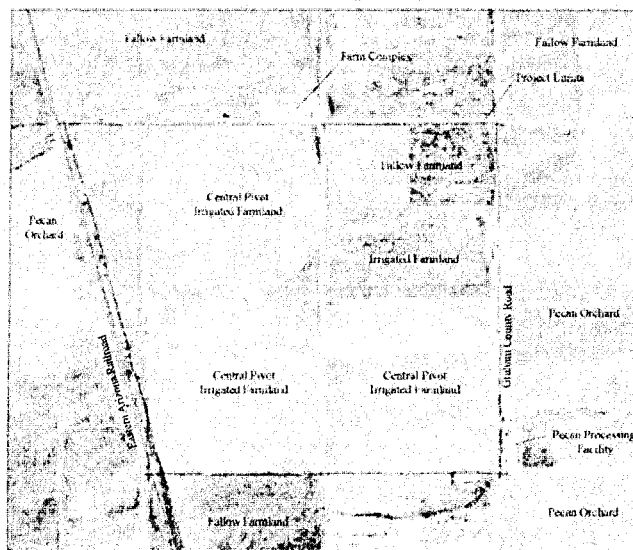
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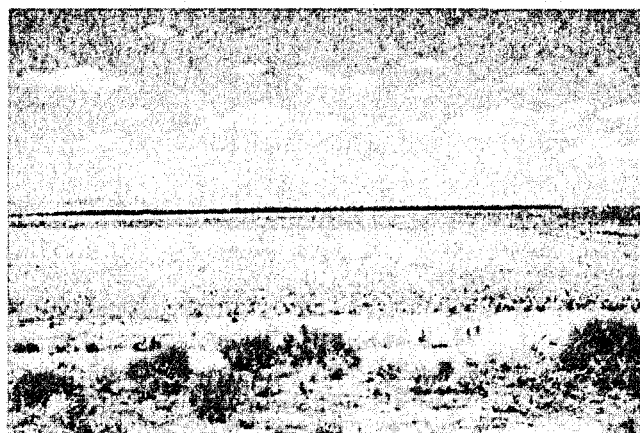
## Scope of Testimony

- Site conditions
- Facility layout
- Surrounding character
- Conceptual landscape plan
- Implementation

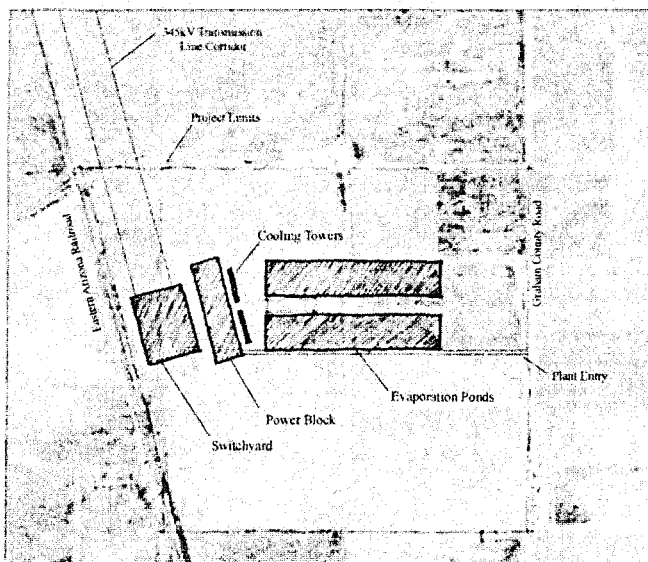
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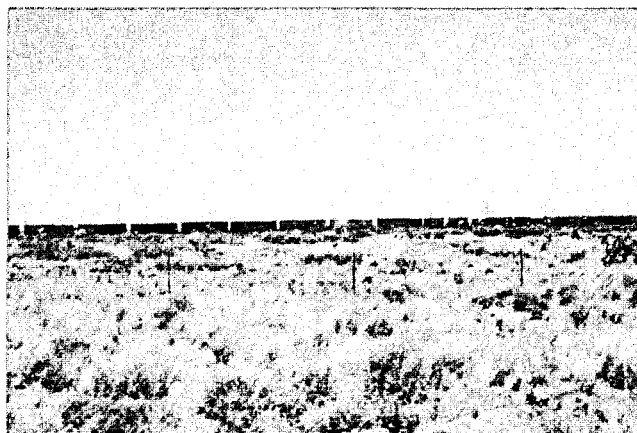
### View of Site Looking East



## Power Facility Layout

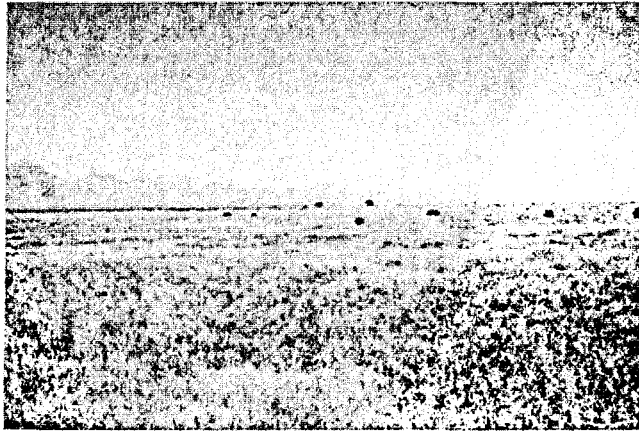


## Surrounding Character: Desert Grassland



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POWER STATION

## Surrounding Character: Farmland



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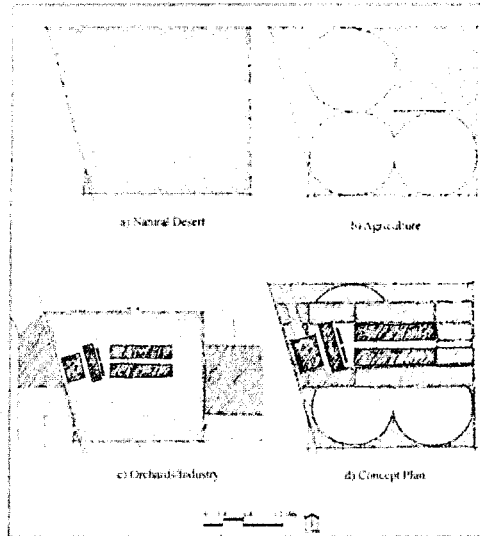
**BOWIE**  
POWER STATION

## Surrounding Character: Orchard



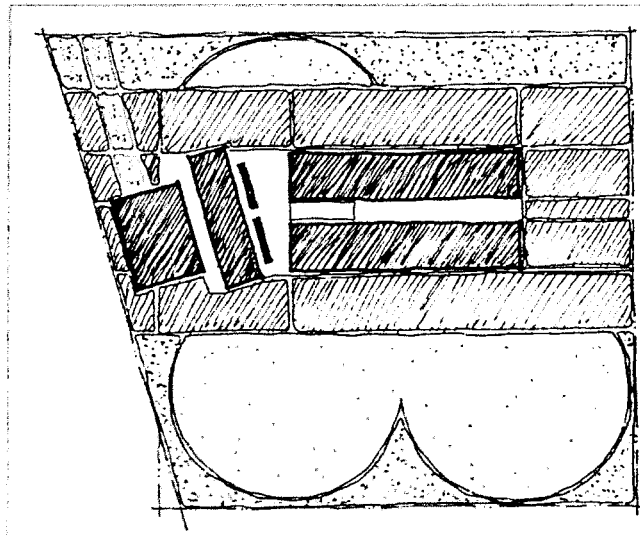
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## Conceptual Landscape Plan Elements



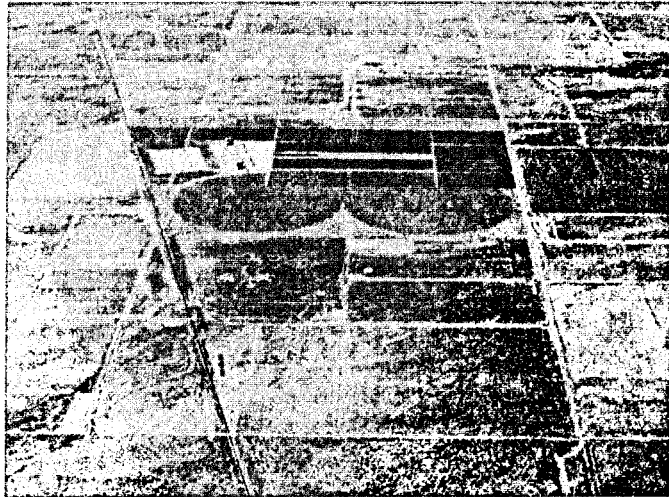
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## Conceptual Landscape Plan



10

## Simulation



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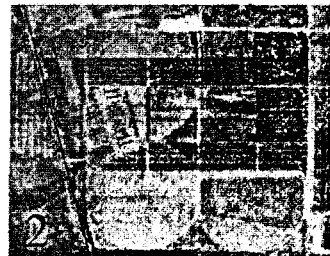
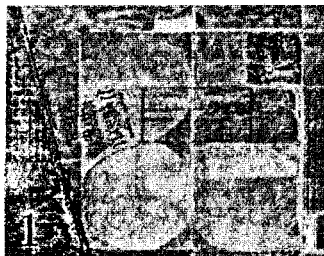
## Implementation

- Plant materials
- Planting/seeding methods
- Irrigation
- Project construction schedule (alternatives)
  - 2 Year Plan
  - Phased Plan

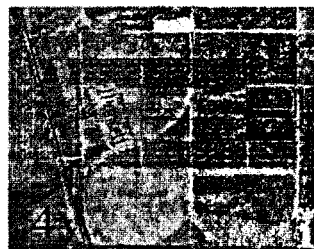
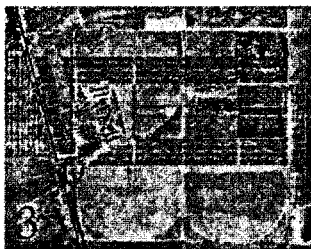
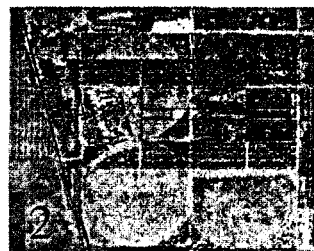
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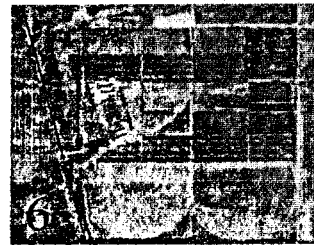
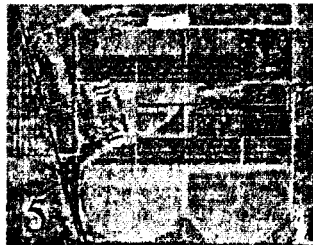
## 2-Year Plan: Years 1 and 2



## Extended Plan: Phases 1-4



## Extended Plan: Phases 5-6



## Summary

- Establish landscape buffers, screening, and open space
- Reclaim land and establish vegetative cover
  - Reduce blowing soil
  - Decrease tumbleweed growth
  - Establish stable native plant species
  - Improve wildlife habitat
- Respond to character of surrounding landscape
- Coordinate with project construction schedule